

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Yager et al.
Serial No.: TBA
Filed: Herewith
Title: MICRO-ELECTROPHORESIS CHIP FOR SEPARATING NUCLEIC
ACIDS AND OTHER CHARGED MOLECULES

PRELIMINARY AMENDMENT

Assistant Commissioner of Patents
Washington, D.C. 20231

Sir:

Preliminary to the examination of the application filed herewith, please make the following amendments:

In the specification:

Page 1, after the title, insert the following paragraph:

This application is a divisional of US Patent Application No. 09/505,659 filed February 17, 2000, which is a divisional of US Patent Application No. 08/973,933 filed February 16, 1997, now US Patent No. 6,176,990, which is a Section 371 National Phase of International Patent Application No. PCT/US96/10110 and claims the benefit of US Provisional Application No. 60/000,036, filed June 8, 1995.

In the Claims:

Please cancel claims 1-23 and add claims 24-33 as follows:

24. A method for manufacturing a microelectrophoresis chip, said chip comprising a substrate having formed therein at least one separation channel for performing separation formed on a first major surface, at least two electrodes disposed within the channel to induce an electric field within the channel, a homogeneous separation medium comprising water soluble fullerenes effective to act as obstacles to migration of biopolymers in a sample applied to the microelectrophoresis chip and in that the microelectrophoresis chip further comprises a detector

element disposed on the chip for observation of migrating biopolymers, wherein the method comprises the steps of:

- (a) forming a mold using lithography, said mold being the reverse of a desired pattern of channels and separators;
- (b) casting or imprinting the channels in a polymeric substrate as a negative impression replica of the mold;
- (c) fusing the polymeric substrate with the channels formed therein to a solid support;
- (d) forming at least two electrodes within each channel; and
- (e) filling each channel with a homogeneous separation medium.

25. The chip according to claim 24, wherein the separation channel is from 1 to 10 μ m in depth.

26. The chip according to claim 24, wherein the chip has a plurality of separation channels.

27. The chip according to claim 24 wherein a plurality of anodes and a plurality of cathodes are disposed within each separation channel.

28. The chip according to claim 24, wherein the plurality of anodes and the plurality of cathodes are disposed to generate electric fields in at least two non-parallel directions.

29. A method for manufacturing a microelectrophoresis chip, said chip comprising a substrate having formed therein at least one separation channel for performing separation formed on a first major surface, at least two electrodes disposed within the channel to induce an electric field within the channel, a homogeneous separation medium comprising self-assembling dendrimers effective to act as obstacles to migration of biopolymers in a sample applied to the microelectrophoresis chip and in that the microelectrophoresis chip further comprises a detector element disposed on the chip for observation of migrating biopolymers, wherein the method

comprises the steps of:

- (a) forming a mold using lithography, said mold being the reverse of a desired pattern of channels and separators;
- (b) casting or imprinting the channels in a polymeric substrate as a negative impression replica of the mold;
- (c) fusing the polymeric substrate with the channels formed therein to a solid support;
- (d) forming at least two electrodes within each channel; and
- (e) filling each channel with a homogeneous separation medium.

30. The chip according to claim 29, wherein the separation channel is from 1 to 10 μ m in depth.

31. The chip according to claim 29, wherein the chip has a plurality of separation channels.

32. The chip according to claim 29 wherein a plurality of anodes and a plurality of cathodes are disposed within each separation channel.

33. The chip according to claim 32, wherein the plurality of anodes and the plurality of cathodes are disposed to generate electric fields in at least two non-parallel directions.

REMARKS

This amendment is filed to continue prosecution of claim 9 from the PCT application, which claim was the subject of a restriction requirement in the parent case. Claim 9

was presented as dependent on claims 1-8. Claims 24-33 are presented to encompass the same subject matter in independent form. No new matter has been added.

Respectfully submitted,



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